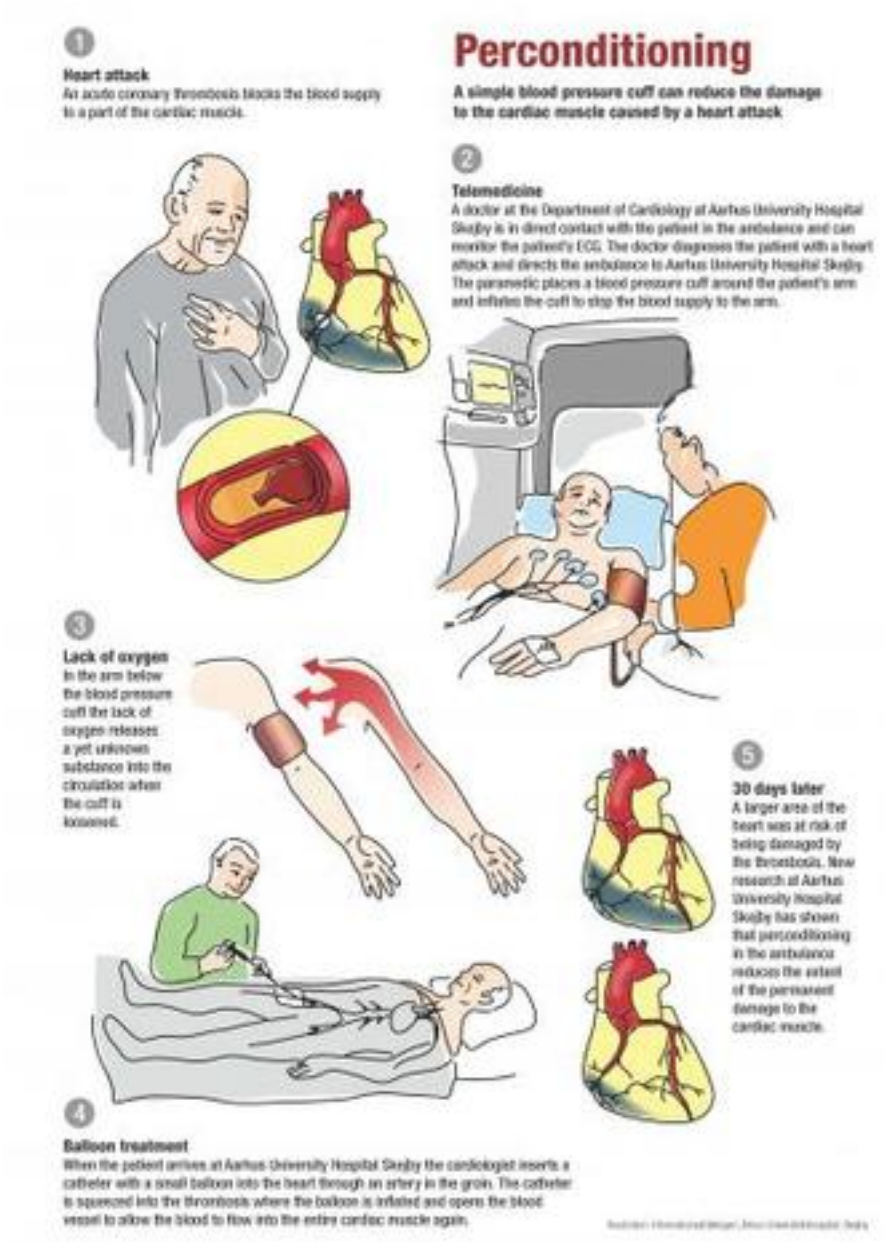
Blood Pressure Cuff May Save Lives in Patients with Acute Heart Attack

Aarhus University



In patients with an acute heart attack, remote ischemic conditioning – intermittent inflation of a blood pressure cuff to cut off blood flow to the arm during transportation to hospital for acute balloon dilatation – reduces subsequent cardiac symptoms and mortality after acute heart attack. The results are presented by researchers from Aarhus University Hospital and Aarhus University in European Heart Journal on-line 12 September 2013.

Activating the Body's Defense Mechanism

Lack of oxygen for short periods of time in a distant organ by intermittently stopping blood flow to a limb, can protect another organ (i.e., the heart), during a prolonged period of lack of oxygen as it is the case during a heart attack. Professor Hans Erik Bøtker and his research team have previously demonstrated that remote ischemic conditioning reduces cardiac tissue damage on average 30% in patients undergoing acute balloon treatment for a heart attack. In patients treated with conditioning, a blood pressure cuff was placed around the upper arm and inflated to 200 mmHg for 5 minutes to cut off blood flow, and then released. The arm then rested for 5 minutes, and then the blood pressure cuff was re-applied. This procedure was repeated 4 times.

The Rate of Complications Is Halved

The researchers have now followed 251 patients assigned to receive conditioning or no conditioning in addition to usual care during transportation to the heart centre for up to 4 years. During the follow-up period the initial salvage of heart tissue by conditioning was translated into a clinical benefit for the patients. The occurrence of new heart symptoms was reduced by 51% in the conditioning group compared to the control group. The total number of deaths was low and death caused by heart disease was reduced by 61%.

The underlying mechanisms are thought to involve activation of endogenous protective systems that induces resistance towards tissue damage in the heart during a heart attack and in particular when re-opening the occluded heart vessel by balloon dilatation. Ph.D student Astrid Drivsholm Sloth, who conducted the present study, characterizes the treatment as promising and predicts that it will have widespread potential in the treatment of heart attacks. However, larger studies are required confirm the clinical implications of this smaller pilot trial such that it can be clarified whether the new intervention can reduce mortality and the development of heart failure after a heart attack.

For more information, visit Aarhus University [1].

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[1] http://www.au.dk